Copper(II) complexation by human and mouse fragments (11-16) of β-amyloid peptide.

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Streszczenie

A potentiometric and spectroscopic (UV-Vis, CD, NMR and EPR) study of copper(II) bonding to the N-terminal (11–16) of human and mouse fragments of β-amyloid peptide (EVHHQK-NH_2, EVRHQK-NH_2 and their N-blocked derivatives) was performed. The results indicate that the hexapeptide amide EVHHQK-NH_2 forms in the pH range 4.5–10.5 complexes in which the coordination of copper(II) is typical {NH_2, $2N^-$, N_{Im}} for the peptide sequence Xaa-Yaa-His. The mouse fragment containing the N-terminal amino group free in a wide pH range is coordinated through the terminal amino group, carbonyl oxygen or one or two deprotonated amide nitrogens from the N-termini, while the fourth coordination site is occupied by a nitrogen donor of imidazole in the form of a macrochelate. When the amino group is blocked (Ac-EVRHQK-NH_2) the imidazole nitrogen of the histidine residue acts as an anchoring bonding site and at higher pH the 3N and 4N complexes are formed with the amide nitrogens coordinated. A blocked hexapeptide modeling a part of human β-amyloid peptide (Ac-EVHHQK-NH_2) forms complexes with coordination through imidazole nitrogens both of histidine residues over a broad pH range. With increasing pH the amide nitrogens are also coordinated. In a wide pH range including physiological, Ac-EVHHQK-NH_2 (human fragment) is much more effective in copper(II) ion bonding than is Ac-EVRHQK-NH_2 (mouse fragment).

Adres publiczny

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